DETAILED ACTION

1. Claims 22-34 have been presented for examination. Claims 1-21 have been cancelled.

Response to Arguments

2. In view of Applicant's amendments, the 35 U.S.C. 112 rejection is withdrawn.

3. Applicant's arguments with respect to the prior art rejection have been considered but are moot in view of the new grounds of rejection presented below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 22-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Friedrich (US Patent No. 5,276,877) in view of **Richardson ("I/O Characterization and Attribute Caches for Improved I/O System Performance").**

Regarding claims 22 and 29:

Friedrich discloses a method of enabling a user to construct on a target data storage system the method comprising the steps of:

a. displaying a user interface to the user **(column 9 line 53-column 10 lines 19)**, the user interface connected over a network **(figure 1)** to the target data storage system **(figure 1: entire system being simulated),** the target data storage system comprising a plurality of storage components **(figure 1: each of the CPUs being simulated, including their attached disks),** and one or more source data storage systems, each of the one or more source data storage systems comprising a plurality of storage components **(column 13 lines 28-35: can add a bus, model, CPU, disk, etc.)**

b. the interface including a selector to enable the user to select a data storage component for inclusion in the target data storage system **(column 13 lines 28-35: ADD)**

c. merging the one or more data storage components from the one or more source data storage systems into the target data storage system, including obtaining configuration characteristics and workload characteristics for the one or more data storage components from the one or more source data storage systems **(column 14 lines 36-50: after component added into system, workload of updated configuration determined),** wherein the workload characteristics comprise I/O operations **(column 11 lines 3-36: I/O)**

d. simulating performance of the target data storage system using one or more workloads to obtain utilization and performance information for the target storage system from the workload characteristics of each data storage system component of the one or more data storage components of the one or more source data storage systems **(Fig. 3(a) and 3(b); column 10 lines 8-20, 43-49; column 14 line 66-column 15 line 2; column 32 line 43-column 33 line 14)**

e. graphically representing the utilization or performance of teach of the one or more data storage components of the one or more source data storage systems merged into the target

storage system on the user interface to enable the user to visually determine whether the target data storage system meets a desired performance **(column 15 lines 3-30)**

Friedrich discloses a computer having a memory and display **(column 2 lines 61-67). Friedrich does not explicitly disclose** obtaining the number of read hits, read misses, least recently used writes and write pending operations. **Richardson teaches** storage optimization **(Introduction)** by monitoring workload characteristics such as the number of read hits **(page 52: read hit ration)**, read misses **(section 4.1.3: read request miss ratio)**, least recently used writes **(section 4.1.3: "data-overwrite cache")** and write pending operations **(section 4.1.3: "data-overwrite cache"; section 5.4 2nd paragraph; section 5.6.1 3rd paragraph).** At the time of the invention, it would have been obvious to one of ordinary skill in the art to combine the teachings of Friedrich and Richardson in order to monitor I/O parameters key to system performance **(Richardson: Introduction).**

Regarding claims 23 and 30:

Friedrich discloses obtaining the workload characteristics from a workload analyzer that analyzes the workload characteristics of the associated data storage component when executing in the source storage system in response to the one or more workloads **(column 14 lines 46-65).**

Regarding claims 24 and 31:

Friedrich discloses inputting the workload characteristics by a user **(column 10 lines 21-33).**

Regarding claim 25:

Friedrich discloses consolidating the source data storage system by constructing the target data storage system to include fewer data strorage components that the source data storage system **(column 14 lines 21-34).**

Regarding claims 26 and 32:

Friedrich discloses data storage components in the target system that are of higher capacity than the source system **(column 26 line 53-column 27 line 21).**

Regarding claims 27 and 33:

Friedrich discloses load balancing the system in accordance with simulation results **(column 11 lines 25-36).**

Regarding claim 28:

Friedrich discloses indicating whether to consolidate a plurality of data storage components of the source system to fewer or newer storage components **(column 29 lines 48-59 displays devices that may be removed).**

Regarding claim 34:

Friedrich discloses partially optimizing the system in accordance with the simulation results **(column 1 line 5-clumn 2 lines 49: analysis done to improve system).**

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. **Examiner's Remarks:** Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in their entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner. In the case of amending the claimed invention,

Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shambhavi Patel whose telephone number is (571) 272-5877. The examiner can normally be reached on Monday-Friday, 8:00 am – 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on (571) 272-2279. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SKP

/Kamini S Shah/
Supervisory Patent Examiner, Art Unit 2128